9 BULLET EXAMINATIONS AND COMPARISONS

9.1 Assignments

9.1.1 Define what is meant by or determine the significance of the following terms or phrases as they relate to the examination and comparison of fired bullets. Discuss these with the Training Officer.

- Slippage
- Shaving
- Obturation
- Leading edge and trailing edge
- Melting
- Blow-by
- Striation
- Individual microscopic marks
- Ogive
- Bearing surface
- Class characteristics
- General rifling
- "insufficient individual microscopic marks"
- Corrosion
- Leading
- "limited individual microscopic marks"
- "single-action" firing
- "double-action" firing
- Knurled & grooved cannelure
- Stab crimp
- Boattail
- Open base
- Closed base
- Recessed base
- Skived tip/hollow point
- Trace evidence aspects (lacquers, sealants, painted tips)

(*Use Training Assignment #32 to complete this objective*.)

_____ _____
Training Officer Date

9.1.2 As they relate to the examination and comparison of fired bullets or bullet fragments, know the importance of, and limitations of, determining the following:

a. weight
b. caliber
c. caliber type
d. manufacturer
a. general rifling characteristics
b. pitch of rifling
c. depth of rifling
d. jacket construction/composition

Discuss this with the Training Officer

(*Use Training Assignment #33 and Practical Exercise #9 to complete this objective*.)

_____ _____
Training Officer Date

9.1.3 Be familiar with the Standard Ammunition File (SAF). Know how to search this file manually and by use of the computer in order to determine the manufacturer of fired bullets. Demonstrate proficiency in using this file to the Training Officer.

(*Use Training Assignment #33 and Practical Exercise #9 to complete this objective*.)

_____ _____
Training Officer Date

9.1.4 Become familiar with the Known Specimen File *(if your laboratory maintains such a file)*. Know its location, composition, filing system, and uses as a reference file. Discuss this with the Training Officer.

(*Use Training Assignment #33 and Practical Exercise #9 to complete this objective*.)

_____ _____
Training Officer Date

9.1.5 Be familiar with the General Rifling Characteristics (GRC) file. Know how to use this file to compile a list of firearms in a "no-gun case." Demonstrate proficiency in using the GRC file to the Training Officer.

(*Use Training Assignment #33 and Practical Exercise #9 to complete this objective*.)

_____ _____
Training Officer Date

9.1.6 Using test bullets and other fired bullets and bullet fragments provided, demonstrate proficiency in accurately determining caliber, caliber type, manufacturer, and rifling characteristics of these fired bullets. Also, prepare a list of firearms that could have been used to fire the bullets provided As necessary, use the KSF, SAF, and GRC files in conducting these examinations.

(*Use Training Assignments #34 and #35 and Practical Exercises #8a and #10 to complete this objective*.)

_____ _____
Training Officer Date

9.1.7 Determine the methods and techniques used to differentiate between lead bullets and bullet cores.

(*Use Training Assignment #42 and Practical Exercise #16*.)

_____ _____
Training Officer Date

9.1.8 Using test bullets fired from polygonal rifled barrels, demonstrate proficiency in accurately determining the rifling characteristics of these fired bullets. Compile a list of firearms that could have been used to fire these bullets using the GRC file.

(*Use Training Assignment #38 and Practical Exercise #13 to complete this objective*.)

_____ _____
Training Officer Date

9.1.9 Become knowledgeable about the facilities in the section for the recovery of fired test bullets. Know when and how to use the horizontal recovery tank and cotton boxes and their limitations. Observe and assist the Training Officer in the recovery of fired bullets using each of these methods. Know and observe all safety rules.

(*Use Training Assignment #39 and Practical Exercise #14 to complete this objective*.)

_____ _____
Training Officer Date

9.1.10 Be familiar with the ammunition storage areas in the section. Know how to locate test ammunition after correctly selecting test ammunition using the SAF. Discuss with the Training Officer the reasons for using substitute ammunition or downloading ammunition for test firing. Know the proper procedure for downloading ammunition for test firing. Under supervision of the Training Officer prepare and fire downloaded test ammunition.

(*Use Training Assignment #39 and Practical Exercise #14 to complete this objective*.)

_____ _____
Training Officer Date

9. 1.11 Test fire "*consecutively-made*" barrels and/or microscopically compare test bullets from "*consecutively-made*" barrels. Observe the differences and similarities in the striations and discuss this with your Training Officer.

(*Use Training Assignment #46 to complete this objective*.)

_____ _____
Training Officer Date

9. 1.12 Using the same .22 caliber firearm, test fire two each of the following cartridges and attempt to identify the test bullets with each other. Take appropriate photographs and notes.

a. .22 Long Rifle caliber Remington with lead bullets
b. .22 Long Rifle caliber Winchester with lead bullets
c. .22 Long Rifle caliber Remington with brass-coated lead bullets
d. .22 Long Rifle caliber Winchester with copper-coated lead bullets
e. .22 Long caliber Remington with lead bullets

(*Use Training Assignment #40 and Practical Exercise #15 to complete this objective*.)

_____ _____
Training Officer Date

9.1.13 Using the same .357 Magnum caliber revolver, test fire two each of the following cartridges and attempt to identify the test bullets with each other. Take appropriate photographs and notes.

a. .38 Special caliber Remington lead round-nosed bullet
b. .38 Special caliber Remington jacketed bullet
c. .357 Magnum caliber Remington jacketed bullet
d. .357 Magnum caliber Winchester Silvertip bullet
e. .357 Magnum caliber Federal Nyclad bullet

(***Use Training Assignment #37 and Practical Exercise #13 to complete this objective.***)

_____ _____
Training Officer Date

9.1.14 Using the same 9mm Luger pistol, test fire two each of the following cartridges and attempt to identify the test bullets with each other. Take appropriate photographs and notes.

a. 9mm Luger Federal Hydra-shok
b. 9mm Luger PMC Starfire
c. 9mm Luger Remington full metal jacket
d. 9mm Luger Winchester Silvertip
e. 9mm Luger CCI total metal jacket
f. 9mm Luger Black Talon/Ranger SXT
g. 9mm Luger Federal Nyclad

(***Use Training Assignment #36 and Practical Exercise #11 to complete this objective.***)

_____ _____
Training Officer Date

9.1.15 Using a .22 caliber rifle, test fire and recover two test bullets and identify these bullets with each other. Cut off approximately three inches of the muzzle of the barrel and crown the muzzle end of the barrel. Test fire and recover two test bullets using the same ammunition as above. Microscopically compare these bullets with each other and with the previously fired test bullets.

(***Use Training Assignment #43 to complete this objective.***)

_____ _____
Training Officer Date

9.1.16 Using a 30 caliber rifle, test fire two each of the following cartridges and compare the tests with each other. Conduct this test with the Training Officer.

a. 30 caliber Remington jacketed soft-point bullet
b. 30 caliber Remington Accelerator cartridges
c. Test fire and inter-compare steel jacket bullets vs. Copper jacket bullets from the same barrel

(***Use Training Assignment #45 to complete this objective.***)

_____ _____
Training Officer Date

9.1.17 Using a .32 S & W caliber Harrington & Richardson revolver, test fire two each of the following cartridges and compare the test bullets with each other. Conduct this test with the Training Officer.

a. .32 S & W caliber Remington with lead bullet
b. .32 Auto caliber Remington with full metal case jacketed bullet

_____ _____
Training Officer Date

9.1.18 Test fire each of the following pistols. Using two test bullets from each pistol, make microscopic comparisons of the test bullets. Conduct this test with your Training Officer.

a. 9mm Glock pistol
b. 9mm H&K, Model P7, pistol
c. 9mm Steyr, Model GB, pistol

(*Use Training Assignment #45 to complete this objective.*)

_____ _____
Training Officer Date

9.1.19 Compile a list of reasons as to why bullet identifications cannot be made in some cases, and why some barrels and bullets can preclude or tend to preclude identifications. This list should include, but not be limited to, the results of the above testing.

(*Use Training Assignment #43 to complete this objective.*)

_____ _____
Training Officer Date

9.1.20 Discuss the significance of identifying manufacturing toolmarks on a fired bullet from a victim with those on unfired bullets loaded into cartridges from the suspect. Read the article in the April 1985 issue of the Crime Laboratory Digest concerning "*Manufacturing Toolmark Identification on the Base of Jacketed Bullets*."

(*Use Training Assignment #44 to complete this objective.*)

_____ _____
Training Officer Date

9.1.21 Discuss the feasibility of determining caliber and/or the rifling characteristics of a fired bullet from an examination of a bullet hole in metal.

(*Use Training Assignment #44 to complete this objective.*)

_____ _____
Training Officer Date

9.1.22 Test fire a .22 caliber firearm. Compare and identify test bullets with each other. Using this same firearm, "slug" the barrel and compare the previously fired test bullets with the bullets used to "*slug*" the barrel. Cut off approximately 25 percent of the barrel at the muzzle and "*slug*" this portion of the barrel and compare these tests with the previous test bullets. Conduct this exam with the Training Officer.

(***Use Training Assignment #43 to complete this objective.***)

_____ _____
Training Officer Date

9.1.23 Obtain a copy of and be familiar with the Firearm Section protocol for the examination of fired bullets.

(***Use Training Assignment #44 to complete this objective.***)

_____ _____
Training Officer Date

9.2 Reference Materials Bullet Examinations and Comparisons; Shotshell Projectiles

The following reference materials serve several purposes:

- To provide a wider range of additional resources in a given topic.
- To provide reference materials for future professional use
- To gain additional in depth knowledge in a particular subject area

Other references encountered in this category should be made as additional notes at the end of this listing

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